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CENTRAL FAX CENTERU.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

SEP 20 2007

Docket No.: 2156-301A
Examiner: C. HamiltonREMARKS

Claims 6-10 and 12-25 are currently pending in the instant application. Claims 6, 7, 16 and 18 have been amended and claims 1-5, 11, and 26 have been canceled.

Priority Claim

The Examiner asserts that Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 or 121 because the reference must include the relationship of all non-provisional application and a reference to the prior application must be inserted in the first sentence of the specification or in an application data sheet.

However, the Examiner's attention is directed to the Preliminary Amendment, submitted concurrently with the filing of the present application, in which the reference to the prior application was added in the first sentence of the specification in compliance with 35 U.S.C. § 120.

In reviewing this previously submitted claim, Applicant noted that the relationship between the International application and the first filed application was not specified and have now amended the disclosure to properly specify the relationship between these two applications in the chain of priority. The information concerning the claim was recognized by the Office as shown by its inclusion on the filing receipt. Because Applicant included a benefit claim in the application but not in the manner specified by 37 CFR 1.78(a) within the time period set forth in 37 CFR 1.78(a), a petition is not required to correct the claim because the information concerning the claim was recognized by the Office.

Accordingly, Applicant respectfully submits that all of the conditions for receiving the benefit of an earlier filing date have been complied with and notice to that effect is earnestly solicited.

(W)546313)

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

Claim Objections

Claim 18 has been objected to as ending with a semicolon instead of a period. In response, Applicant has amended claim 18 so that it ends with a period.

Rejections Under 35 U.S.C. §112

Claims 2 and 7 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite because there is no antecedent basis for "the hollow cylindrical base layer." In response, Applicant has amended claims 2 and 7 to refer to the hollow cylindrical support layer instead of the hollow cylindrical base layer. Reconsideration and withdrawal of the rejection of claims 2 and 7 as lacking antecedent basis is respectfully requested.

Rejections Under 35 U.S.C. §103

Claims 1-10, 14 and 26 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kanga in view of Fan and Cushner.

As set forth above, claims 1-5, 11 and 26 have been canceled.

The Examiner asserts that Kanga describes Applicant's photosensitive printing element and method of making a hollow cylindrical printing sleeve with the exception of the formation of a hollow cylindrical support. The Examiner uses Fan and Cushner to cure the deficiencies of Kanga and asserts that Fan describes a cylinder use as a support and Cushner describes the formation of Fan systems on cylindrical seamless cylinders. The Examiner concludes that it would be obvious to one of ordinary skill in the art to form the plates of Kanga into the seamless cylinder of Cushner using the ablatable materials of Fan.

In response, Applicant has amended claim 6 to include the subject matter of canceled claim 11 and affirmatively recite that the at least one source of actinic radiation comprises one or more collimated sources of actinic radiation. Claim 6 has also been amended to recite that light rays emanating from the at least one source of actinic radiation strike the photosensitive

(W1546313)

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact. Support for this amendment can be found in the specification, for example at pages 11-12 and no new matter is believed to have been added by virtue of this amendment.

As described in Applicant's disclosure (see e.g., page 3), when a printing sleeve (instead of a flat printing plate) is exposed to actinic radiation, the source of actinic radiation may due to curvature of the surface, hit the photocurable surface at an angle, instead of perpendicular to the photocurable surface, resulting in loss of image quality. This feature is not described or claimed in the prior art.

None of the cited references, alone or in combination, describe or suggest the that the source of actinic radiation may be collimated such that light rays emanating from the at least one source of actinic radiation strike the photosensitive printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.

The Examiner suggests that Gush, Werber, Gelbart and Ohba can be used to cure the deficiencies of Kanga in view of Fan and Cushner because these references all describe collimated light sources.

Applicant respectfully disagrees.

In particular, both Werber and Gush are directed to conventional platemaking processes using liquid photosensitive compositions. There is no teaching or suggestion that such liquid photosensitive compositions would be usable in making seamless printing sleeves as in the present invention. Moreover, both Werber and Gush are directed to planar printing elements and thus do not solve the problem of collimating the source of actinic radiation strikes the printing element at an angle that is substantially perpendicular to the surface so that image quality can be improved.

(W1546313)

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

Gelbart also does not solve the problems of Kanga, Fan and Cushner because Gelbart also does not recognize the problem of the loss of image quality when the source of actinic radiation hits the photocurable surface at an angle instead of perpendicular to the photocurable surface when exposing a curved or arcuate printing surface to actinic radiation. Furthermore, Gelbart also does not describe or suggest a seamless printing element but rather only a planar printing element that can be wrapped around a printing cylinder in one embodiment of his invention.

Ohba also does not cure the deficiencies of Kanga, Fan and Cushner because Ohba does describe collimating the source of actinic radiation for the same reason as in the present application. The light source in Ohba is collimated to image to record an image on the surface and not to expose the printing element to actinic radiation after the image has been created in the printing element. Thus, Ohba also does not recognize the problem of loss of image quality when the source of actinic radiation hits the printing surface at an angle as discussed above.

For all of these reasons, Applicant respectfully submits that claim 6, as presently amended, is readily distinguished from the prior art of record. In addition, claims 7-10 and 14, which depend directly or indirectly from claim 6 are also believed to be allowable over the prior art of record and notice to that effect is earnestly solicited.

Claim 11 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanga in view of Fan and Cushner and further in view of Gush and Weber and Gelbart and Ohba.

As discussed above, the subject matter of claim 11 has been incorporated into independent claim 1.

Claim 12 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanga in view of Fan and Cushner and further in view of Plambeck and Ferree.

(W1346313)

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

The Examiner next asserts that there is no disclosure in Kanga, Fan or Cushner to expose the entire surface of the photosensitive printing element to actinic radiation at one time but that it is known in the art as taught by Kitamura. The Examiner concludes that the use of a quick exposure instead of a scanning exposure would have been prima facie obvious to save time in imaging the surface of the cylinder.

Because claim 11 has been incorporated into claim 6 as set forth above, claim 12 requires both that light sources are arranged around the photosensitive printing element so that the light sources simultaneously expose the entire surface of the printing element to actinic radiation and that the light sources are collimated. The combination of these features is not described or suggested by the prior art.

Kitamura does not describe or suggest collimating the light sources in their method of manufacturing a printing cylinder, nor would they because the process of Kitamura is very different from the present invention and very different from the prior art cited. Kitamura is directed to a process in which a liquid photosensitive resin composition is fed into a hollow cylindrical element which is spun at a high speed to deposit the resin composition on the inner surface of the hollow cylinder and cause the resin composition to cure in situ (see e.g., claim 1). Thus, Kitamura is curing the entire surface of the resin composition through the surface of the cylinder layer. Kitamura is using multiple sources of light simply to cure the liquid resin composition. Thus, there is no teaching or suggestion in Kitamura to collimate the light source to improve image quality because there is no image that has been created. Furthermore Kitamura cannot be combined with Gelbart or Ohba, which describe cylindrical elements, because Gelbart and Ohba only describe a collimated light source that is part of a scanning head (see Gelbart, Fig. 1 and Ohba Fig. 1) and there is no teach or suggestion in any of the references to collimate multiple sources of light to simultaneously expose an entire surface of a photosensitive printing element to actinic radiation with light rays that strike the printing element at an angle substantially perpendicular to the surface of the printing element at the point of impact.

{W1546313}

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

For all of these reasons, claim 12 is believed to be allowable over the prior art of record and notice to that effect is respectfully requested.

Claim 13 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanga in view of Fan and Cushner and further in view of Kitamura and further in view of Plambeck and Ferree.

The Examiner asserts that the combination of Kanga, Fan and Cushner in view of Kitamura does not describe the use of collimators, wherein at least one surface substantially absorbs actinic radiation incident upon the surface and actinic radiation passes through the collimator before reaching the photopolymerizable printing plate. The Examiner uses Plambeck and Ferree for their teaching of an egg-crate baffle and concludes that it would be obvious to use a device such as an egg crate baffle to control the angle of light in imaging the cylinders of Fan and Cushner.

As described in the disclosure (see e.g., page 3), when a printing sleeve (instead of a flat printing plate) is exposed to actinic radiation, the source of actinic radiation may due to curvature of the surface, hit the photocurable surface at an angle, instead of perpendicular to the photocurable surface, resulting in loss of image quality. As discussed in the disclosure (see e.g., pp. 11-12), the inventor of the present invention has discovered that the quality of the relief image can be improved by collimating one or more sources of actinic radiation. In the instant invention, this refers to the light rays striking the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact. As shown in Figs. 2 and 4, the UV lamps or other actinic radiation source(s) can be collimated by positioning at least one collimator between each of the UV lamps and photopolymerizable printing sleeve. This feature is neither described nor suggested in any of the prior art cited by the Examiner.

{W1546313}

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

The Examiner has cited Plambeck and Ferree for their teachings of egg-crate baffles, because such collimators are not described or claimed in either Fan or Cushner. However, neither of these references, alone or in combination describes the use of such collimators so that the light rays strike the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.

Plambeck describe the use of broad uniform light sources, such as a bank of fluorescent tubular lamps, wherein extremely low angle rays can come from more remote portions of the source and are thus lower in intensity and do not ordinarily effect polymerization. In this instance, Plambeck mentions that a light-controlling baffle can be used between a light source and a negative to eliminate those rays below the minimum desired angle. Thus Plambeck does not recognize the use of a collimator to collimate the light so that light rays strike an arcuate surface (i.e., the printing sleeve) at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact but rather only describe the use of a collimator so that low angle rays can be eliminated.

Ferree does not solve the deficiencies of Plambeck because Ferree also does not recognize the use of a collimator to collimate light so that the light rays strike an arcuate surface at an angle that is substantially perpendicular to the surface at a point of impact so that image quality can be improved. Ferree is only concerned with eliminating glare when light is used for local illumination. Thus, there is no teaching or suggestion in Ferree to use a collimator in the manner claimed in the present invention. Applicant respectfully submits that Plambeck's use of a light controlling baffle to eliminate rays below a minimum desired angle and Ferree's use of a baffle to eliminate glare, alone or in combination, do not describe or suggest the use of a collimator in accordance with the present invention.

For all of these reasons, reconsideration and withdrawal of the rejection of claim 13 as being unpatentable over Kanga in view of Fan and Cushner and further in view of Kitamura and further in view of Plambeck and Ferree is respectfully requested.

(W1546313)

U.S. Serial No.: 10/586,414
Filing Date: July 19, 2006

Docket No.: 2156-301A
Examiner: C. Hamilton

Claims 16-17 and 21-25 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fan in view of Cushner and further in view of Plambeck and Ferree.

The Examiner asserts that Fan and Cushner describe the use of a photosensitive printing element on a cylindrical seamless cylinder but does not describe the use of collimated light for exposing the photopolymerizable layer. The Examiner uses Plambeck and Ferree to cure the deficiencies of Fan and Cushner and asserts that Plambeck and Ferree describe the use of an egg crate baffle. The Examiner concludes that it would be obvious to one skilled in the art to use an egg crate baffle to control the angle of light in imaging the cylinders of Fan and Cushner.

Applicant respectfully disagrees.

As described in the disclosure (see e.g., page 3), when a printing sleeve (instead of a flat printing plate) is exposed to actinic radiation, the source of actinic radiation may due to curvature of the surface, hit the photocurable surface at an angle, instead of perpendicular to the photocurable surface, resulting in loss of image quality. As discussed in the disclosure (see e.g., pp. 11-12), the inventor of the present invention has discovered that the quality of the relief image can be improved by collimating one or more sources of actinic radiation. In the instant invention, this refers to the light rays striking the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact. As shown in Figs. 2 and 4, the UV lamps or other actinic radiation source(s) can be collimated by positioning at least one collimator between each of the UV lamps and photopolymerizable printing sleeve. This feature is neither described nor suggested in any of the prior art cited by the Examiner.

The Examiner has cited Plambeck and Ferree for their teachings of egg-crate baffles, because such collimators are not described or claimed in either Fan or Cushner. However, neither of these references, alone or in combination describes the use of such collimators so

{W1546313}

U.S. Serial No.: 10/586,414
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Docket No.: 2156-301A
Examiner: C. Hamilton

that the light rays strike the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.

Plambeck describe the use of broad uniform light sources, such as a bank of fluorescent tubular lamps, wherein extremely low angle rays can come from more remote portions of the source and are thus lower in intensity and do not ordinarily effect polymerization. In this instance, Plambeck mentions that a light-controlling baffle can be used between a light source and a negative to eliminate those rays below the minimum desired angle. Thus Plambeck does not recognize the use of a collimator to collimate the light so that light rays strike an arcuate surface (i.e., the printing sleeve) at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact but rather only describe the use of a collimator so that low angle rays can be eliminated.

Ferree does not solve the deficiencies of Plambeck because Ferree also does not recognize the use of a collimator to collimate light so that the light rays strike an arcuate surface at an angle that is substantially perpendicular to the surface at a point of impact so that image quality can be improved. Ferree is only concerned with eliminating glare when light is used for local illumination. Thus, there is no teaching or suggestion in Ferree to use a collimator in the manner claimed in the present invention. Applicant respectfully submits that Plambeck's use of a light controlling baffle to eliminate rays below a minimum desired angle and Ferree's use of a baffle to eliminate glare, alone or in combination, do not describe or suggest the use of a collimator in accordance with the present invention.

For all of these reasons, reconsideration and withdrawal of the rejection of claims 16-17 and 21-25 as allegedly being unpatentable over Fan in view of Cushner and further in view of Plambeck and Ferree is respectfully requested.

Claims 17-20 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fan in view of Cushner and further in view of Plambeck and Ferree and further in view of Kang.

{W1546313}

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Filing Date: July 19, 2006

SEP 20 2007

Docket No.: 2156-301A
Examiner: C. Hamilton

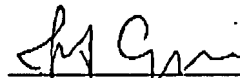
Because claim 16 is believed to be allowable over the prior art of record for the reasons provide above, claims 17-20 which depend directly or indirectly from claim 16 are also believed to be allowable over the prior art of record and notice to that effect is earnestly solicited.

CONCLUSION

Applicant believes that the foregoing is a full and complete response to the Office Action of record. Accordingly, an early and favorable reconsideration of all of the claims is requested. Applicant believes that claims 6-10 and 12-25 are now in condition for allowance and an indication of allowability and an early Notice of Allowance of all of the claims is respectfully requested.

If Examiner feels that a telephonic interview would be helpful, she is requested to call the undersigned at (203) 575-2648 prior to the issuance of the next office action.

Respectfully submitted,



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{W1546313}